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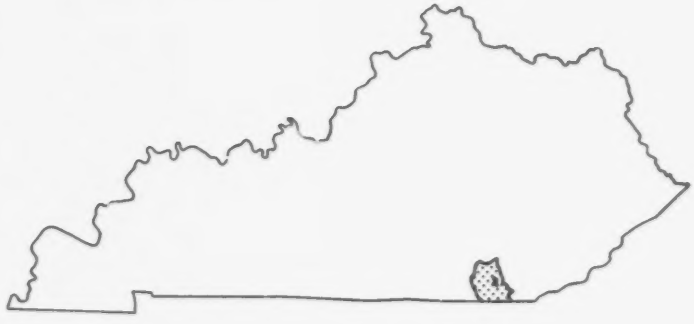
FLOOD INSURANCE STUDY

WHITLEY COUNTY, KENTUCKY

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
WILLIAMSBURG, CITY OF	210228
UNINCORPORATED AREAS	210226



JANUARY 5, 1989

Federal Emergency Management Agency

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY

WHITLEY COUNTY, KENTUCKY
AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Whitley County, Kentucky, including the City of Williamsburg and the Unincorporated Areas of Whitley County (hereinafter referred to collectively as Whitley County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for the Cumberland River were performed by the U.S. Army Corps of Engineers (COE), Louisville District, in 1986.

The hydrologic and hydraulic analyses for the remaining streams were performed by the U.S. Geological Survey (USGS) (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823. Additional data for Lynn Camp Creek were obtained from a report by the COE, Nashville District (Reference 1). This study was completed in July 1986.

1.3 Coordination

On September 24, 1987, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the geographic area of Whitley County, Kentucky. The area of study is shown on the Vicinity Map (Figure 1).

Flooding caused by overflow of the Cumberland River, Clear Fork, Browns Creek, Watts Creek, Lynn Camp Creek, and Meadow Creek was studied in detail.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through July 1991. The scope and methods of study were proposed to and agreed upon by FEMA and Whitley County.

2.2 Community Description

Whitley County is in southwestern Kentucky and is bordered by Bell County, Kentucky, on the east; Knox County, Kentucky, on the northeast; Laurel County, Kentucky, on the north; McCreary County, Kentucky, on the west; and Campbell and Claiborne Counties, Tennessee, on the south. Whitley County is served by Interstate 75, U.S. Route 25, the CSX railroad, and the Norfolk Southern Railway. The 1980 population of Whitley County was reported to be 33,396 (Reference 2).

2.3 Principal Flood Problems

Several areas in Whitley County are subject to flooding by the Cumberland River, Clear Fork, Lynn Camp Creek, and Watts Creek. The flood of 1929 on Clear Fork at Saxton, Kentucky, reached stages of 963.53 and 960.23 feet National Geodetic Vertical Datum of 1929 (NGVD) (Reference 3).

The flood of 1957 reached an elevation of 961.43 feet NGVD. The gage at Saxton, at the State Route 1804 bridge over Clear Fork, has been in operation since 1968. Three floods have since been recorded. The flood of 1969 reached an elevation of 960.42 feet NGVD and had a discharge of 19,900 cubic feet per second (cfs). The 1973 flood reached an elevation of 962.75 feet NGVD and had a discharge of 22,200 cfs. The flood of April 1977, which is the highest for the period of record, reached an elevation of 963.34 feet NGVD and had a discharge of 22,800 cfs. Some high-water marks for the 1969 event were obtained by the COE, Nashville District. According to the peak discharge-frequency analysis at the Saxton gage, the 1977 flood on Clear Fork has a recurrence interval of approximately 15 years.

The 1957 flood on Lynn Camp Creek at the U.S. Route 25W bridge in the City of Corbin, Kentucky, had an estimated elevation of 1,072.2 feet NGVD and a discharge of 9,000 cfs (Reference 1).

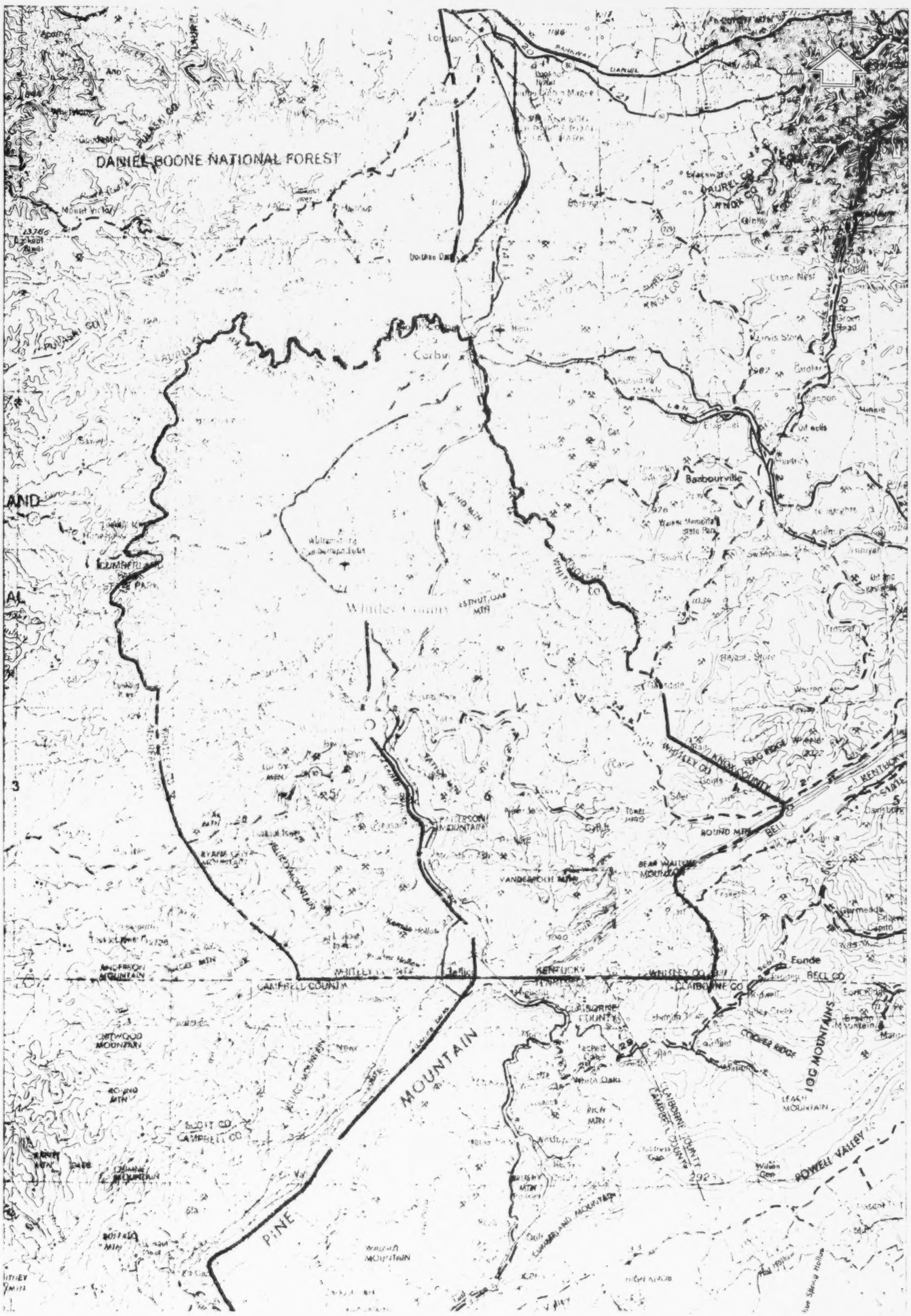


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

APPROXIMATE SCALE
0 4 8 12 MILES

VICINITY MAP

No peak flood information is available for Watts Creek, Meadow Creek, or Browns Creek. Some high-water marks from the April 1977 flood on Watts Creek were pointed out by local residents. These high-water marks indicate that the April 1977 flood on Watts Creek has an estimated recurrence interval of 50 years.

According to local residents, only a few dwellings in the study areas were affected by the 1977 flood. A significant amount of land with the potential for development is within the flood hazard area. This is especially true for large floodplain areas in the Watts Creek reach and the upper end of the Clear Fork reach near the Kentucky-Tennessee border.

2.4 Flood Protection Measures

Channel improvements on Lynn Camp Creek at the City of Corbin were completed by the COE, Nashville District, in September 1964. These improvements included the enlargement of the natural channel and the construction of a cutoff channel. This work was initiated as a result of the damage in Corbin caused by the 1957 flood. The resulting projected decrease of the 1957 flood profile and the intermediate regional flood profile elevations on Lynn Camp Creek at Corbin are shown in the COE Flood Plain Information Report for Corbin (Reference 1).

Gatliffi Dam, a small dam on Watts Creek, was constructed to supply water to the Gatliffi State Fish Hatchery and does not provide substantial flood protection for Whitley County.

No other flood protection measures are known to exist within the county.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The 100-year discharge for the Watts Creek, Meadow Creek, and Browns Creek reaches were determined using USGS procedures (Reference 4). This report was used to determine peak discharges for areas less than ten square miles and no adjustments were made. USGS reports (References 4 and 5) and peak discharge-frequency analyses at the Saxton gage were used to determine the 100-year peak discharge for the Clear Fork reach. The peak discharge-frequency analysis for the Saxton gage was developed according to Water Resources Council Bulletin No. 17B (Reference 6) using data from the entire period of record plus historic peak information, including 16 years of systematic record. COE Floodplain Information Reports for the City of Jellico, Tennessee, and the City of Williamsburg, Kentucky (References 3 and 7) show the Intermediate Regional Flood Profile for a portion of the Clear Fork reach corresponding to a discharge value of 32,000 cfs downstream of Elk Creek, based on rainfall-runoff records for the general region of Jellico.

A USGS gage station with 76 years of record is located on the Cumberland River in Williamsburg. Floodflow-frequency data at that gage was determined using Bulletin No. 17B (Reference 6). Frequency discharges above Clear Fork were determined using square-root drainage area proportion.

Drainage areas were computed from topographic maps for the Watts Creek, Browns Creek, and Meadow Creek basins (Reference 8), as well as for portions of the Clear Fork reach. Most drainage area information concerning the Clear Fork basin was obtained from a USGS Open-File Report (Reference 9).

Peak discharge-drainage area relationships for the 10-, 50-, 100-, and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
MEADOW CREEK					
at mouth	4.71	N/A	N/A	1,640	N/A
BROWNS CREEK					
at mouth	5.12	N/A	N/A	1,730	N/A
about 6,300 feet upstream of State Route 26	3.45	N/A	N/A	1,330	N/A

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
WATTS CREEK					
at mouth	44.14	N/A	N/A	7,150	N/A
just upstream of Gatliffi Dam	24.53	N/A	N/A	4,850	N/A
at Jacks Fork Road	17.88	N/A	N/A	3,940	N/A
at State Route 26	7.02	N/A	N/A	2,130	N/A
CLEAR FORK					
at mouth	370.0	N/A	N/A	34,290	N/A
just upstream of confluence of Wolf Creek	339.0	N/A	N/A	32,610	N/A
at State Route 1804	331.0	N/A	N/A	32,070	N/A
just upstream of confluence of Elk Creek	255.0	N/A	N/A	26,370	N/A
LYNN CAMP CREEK					
at U.S. Route 25E	53.8	N/A	N/A	10,800	N/A
CUMBERLAND RIVER					
at Main Street	1,607.0	40,200	53,300	59,300	74,700
just upstream of confluence of Clear Fork	1,228.0	35,100	46,600	51,800	65,300

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross sections and dimensions of backwater-producing structures were obtained by field survey and aerial photography.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Roughness coefficients (Manning's "n") for water-surface computations for the Cumberland River were assigned on the basis of field inspection of the channel and floodplains, and reproduction of known high-water marks from the April 1977, January 1970, and January 1946 floods. Roughness values varied from 0.050 to 0.095 for the overbank areas and from 0.040 to 0.048 for the channel. Roughness coefficients for the remaining streams were obtained

from field survey and adjusted based on stereo photographs and USGS Water Supply Paper 1849 (Reference 10). For Watts Creek, roughness values average 0.050 for the main channel and 0.080 for the overbank areas. For Clear Fork, roughness values average 0.052 for the main channel and 0.140 for the overbank areas. For Browns Creek, the roughness values average 0.055 for the main channel and 0.065 for the overbank areas. Meadow Creek was modeled using a roughness value of 0.055 for the main channel and 0.070 for the overbank areas. For Lynn Camp Creek, roughness values range from 0.035 to 0.070 for the main channel and from 0.070 to 0.280 for the overbank areas.

Water-surface elevations for the Cumberland River were determined by the COE, Louisville District, using the HEC-2 computer program (Reference 11). The starting water-surface elevation was obtained by slope-area computations.

The HEC-2 and WSPRO computer programs (References 11 and 12) were used to compute the 100-year water-surface elevations for Lynn Camp Creek. The starting water-surface elevation was determined using backwater calculations.

WSPRO (Reference 12) was also used to compute the 100-year water-surface elevations for the remaining streams studied.

When an energy gradient slope is specified, the WSPRO program determines the initial water surface by using the normal water-surface elevation computed by slope conveyance. Average topographic slope and/or low-water slope was used as an approximation to the energy gradient slope. That method was used for Clear Fork and Meadow Creek. The 100-year flood elevation for the Cumberland River at Watts Creek was used as the starting water-surface elevation for Watts Creek. The starting water-surface elevation for Browns Creek was taken from the computed Watts Creek profile. Subreaches were used when it was determined that an appreciable increase in inflow would affect water-surface profile computations.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 50- and 100-year flood elevations are close together, due to limitations of the profile scale, only the 100-year profile has been shown.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the NGVD. Elevation reference marks used in this study are shown on the map and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance

Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 20 feet (Reference 8).

The 100-year floodplain boundary is shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AH, AO, A99, V, and VE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary was delineated using the Flood Hazard Boundary Map for Whitley County, Kentucky (Reference 13).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways for this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 2, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
CUMBERLAND RIVER								
H	588.59	524	10,977	5.4	925.1	925.1	926.1	1.0
I	588.92	390	10,548	5.6	925.9	925.9	926.9	1.0
J	589.59	508	12,299	4.8	927.1	927.1	928.1	1.0
K	589.82	383	11,898	5.0	927.5	927.5	928.5	1.0
L	590.40	414	13,571	4.4	928.5	928.5	929.5	1.0
M	591.21	310	9,806	6.0	929.6	929.6	930.6	1.0
N	591.69	577	11,790	5.0	930.6	930.6	931.6	1.0
O	592.21	541	12,113	4.9	931.6	931.6	932.6	1.0

[1]MILES ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOODWAY DATA

CUMBERLAND RIVER

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

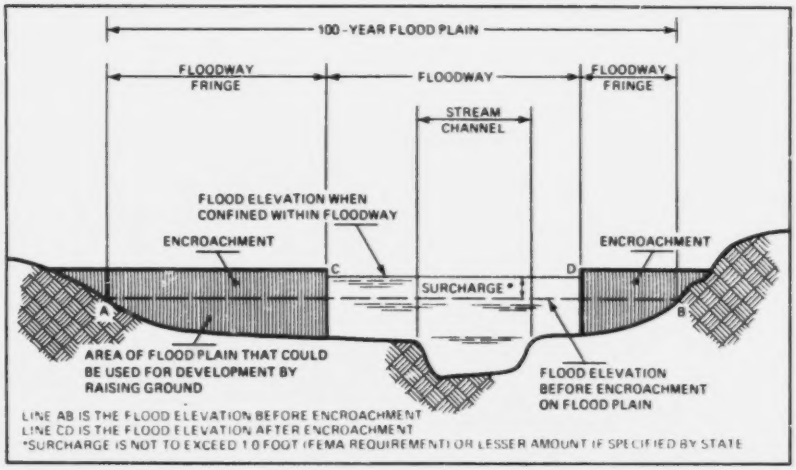

100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FIGURE 2 - Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current Flood Insurance Rate Map presents flooding information for the geographic area of Whitley County. Previously, separate Flood Hazard Boundary Maps and/or Flood Insurance Rate Maps were prepared for each flood-prone incorporated community and the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 3, Community Map History.

7.0 OTHER STUDIES

Flood Insurance Studies published for Bell County and the City of Corbin, Kentucky (References 14 and 15) are in agreement with this study.

Flood Insurance Studies in progress for Knox County, Kentucky, and Claiborne County, Tennessee (References 16 and 17) are in agreement with this study.

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Maps for Whitley County and the City of Williamsburg, Kentucky (References 13 and 18).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 1371 Peachtree Street, NE., Suite 736, Atlanta, Georgia 30309.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
WILLIAMSBURG, CITY OF	FEBRUARY 1, 1974	MARCH 5, 1976	JANUARY 5, 1989	
UNINCORPORATED AREAS	DECEMBER 20, 1974	MAY 27, 1977	JANUARY 5, 1989	

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 REFERENCES AND BIBLIOGRAPHY

1. U.S. Army Corps of Engineers, Nashville District, Flood Plain Information Report, Lynn Camp and East Fork Lynn Camp Creeks, Corbin, Kentucky, May 1974.

2. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Kentucky, Washington, D.C., February 1982.

3. U.S. Army Corps of Engineers, Floodplain Information Report, Jellico, Tennessee, 1972.

4. U.S. Geological Survey, Water Resources Investigations Report 76-62, Techniques for Estimating Magnitude and Frequency of Floods in Kentucky, C.H. Hannum, 1976.

5. ————, Water Resources Investigations Report 76-207, Techniques for Estimating Magnitude and Frequency of Floods in Tennessee, W.J. Randolph, and C.R. Gamble, 1976.

6. U.S. Department of the Interior, Geological Survey, Interagency Advisory Committee on Water Data, Office of Water Data Coordination, Hydrology Subcommittee, Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency, September 1981, revised March 1982.

7. U.S. Army Corps of Engineers, Floodplain Information Report, Williamsburg, Kentucky, 1969.

8. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 20 Feet: Jellico East, Tennessee-Kentucky, 1970; Jellico West, Tennessee-Kentucky, 1953; Rockholds, Kentucky, 1952; Saxton, Kentucky, 1982; Williamsburg, Kentucky, 1982; Wofford, Kentucky, 1976.

9. ————, Open-File Report 81-61, Drainage Areas of Streams at Selected Locations in Kentucky, D.E. Bower and W.H. Jackson, 1981.

10. ————, Water Supply Paper 1849, Roughness Characteristics of Natural Channels, H.H. Barnes, Jr., 1967.

11. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, April 1984.

12. U.S. Department of Transportation, Federal Highway Administration, Report No. FHWA/RD-86/108, Bridge Waterways Analysis Model: Research Report, J.O. Shearman, W.H. Kirby, V.R. Snyder, and H.N. Flippo, July 1986.

13. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Whitley County, Unincorporated Areas, Kentucky, May 1977.

14. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Bell County, Unincorporated Areas, Kentucky, February 1981.

15. ————, Flood Insurance Study, City of Corbin, Whitley County, Kentucky, December 1986.

16. ----------, Flood Insurance Study, Knox County, Unincorporated Areas, Kentucky, in progress.

17. ————, Flood Insurance Study, Claiborne County, Unincorporated Areas, Tennessee, in progress.

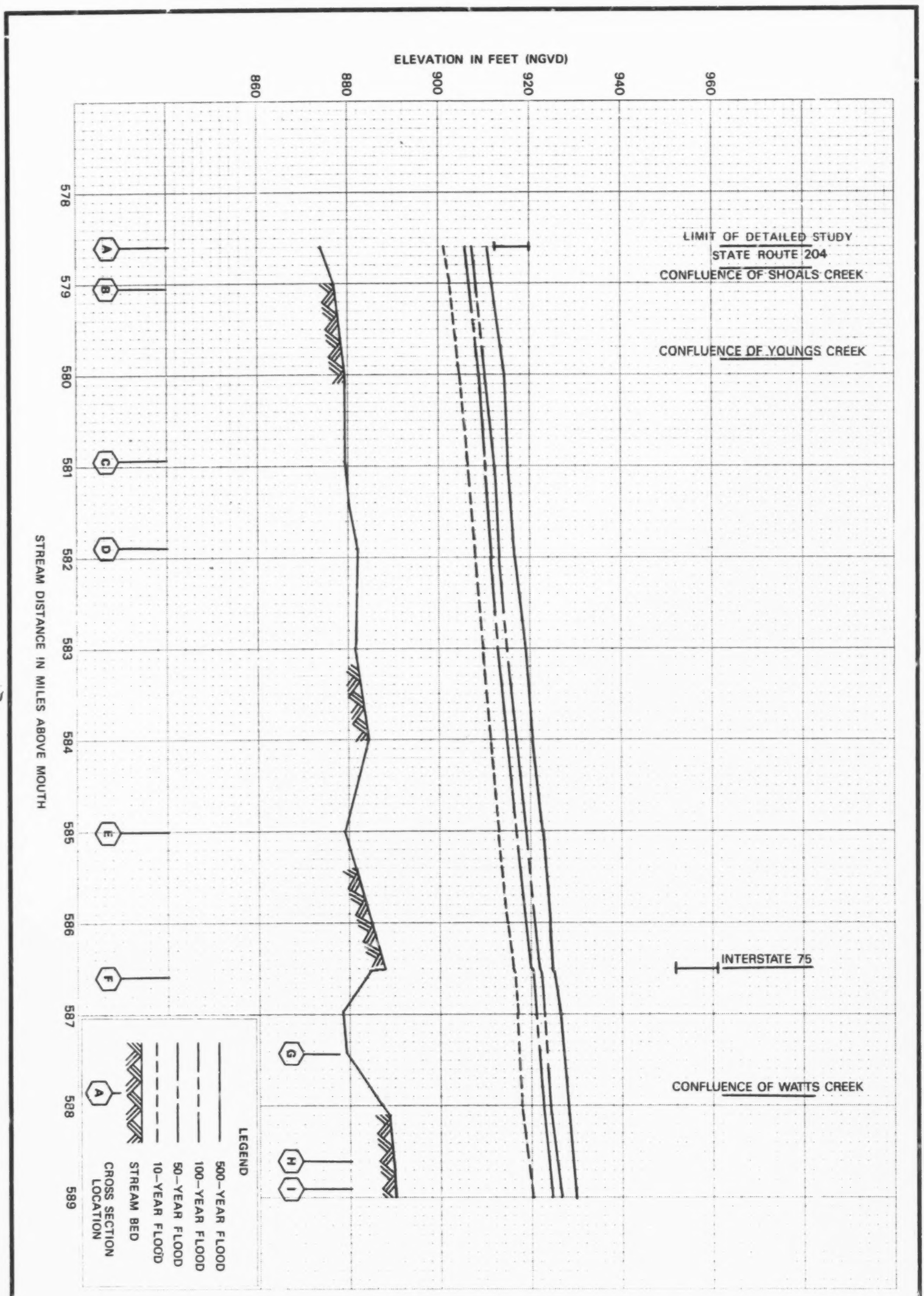
18. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Williamsburg, Whitley County, Kentucky, March 1976.

ELEVATION REFERENCE MARKS

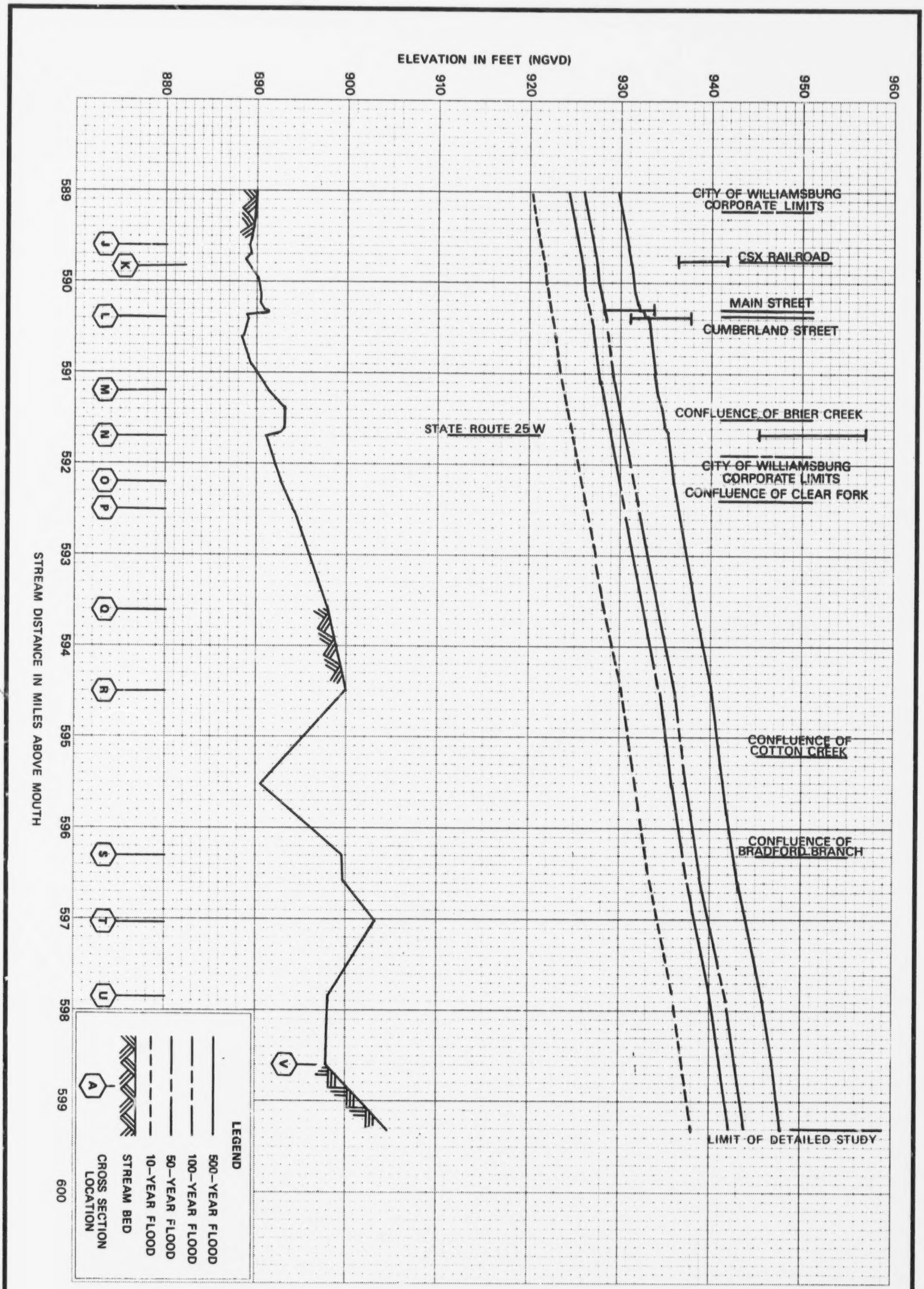
REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
1	0070	937.82	U.S. Coast and Geodetic Survey disk stamped "V 192 1950" set in concrete post projecting 4 inches above ground located 32.5 feet east of telephone pole about 157 feet northwest of intersection of U.S. Route 25W and State Route 92
2	0070	965.86	chiseled cross on southwest sidewalk of U.S. Route 25W bridge over CSX railroad, about 38 feet southwest of northeast end of bridge, 15 feet from centerline of road
3	0080	982.19	U.S. Coast and Geodetic Survey disk stamped "C 193 1950" set in top of north abutment of railroad bridge no. 44 over Carr Creek located about 0.2 mile southwest along CSX railroad from Rockholds railroad station
4	0080	968.11	U.S. Coast and Geodetic Survey disk stamped "D 49 1935" set in top of south abutment of railroad bridge no. 45 over Watts Creek located about 1.3 miles southwest along CSX railroad from Rockholds railroad station
5	0090	945.22	chiseled square on southwest end of east concrete bridge rail on State Route 26 bridge at Wofford
6	0090	981.99	chiseled square on south corner of southwest wingwall of State Route 779 bridge over Browns Creek about 2.0 miles east of intersection of State Route 779 and State Route 26
7	0110	977.47	U.S. Coast and Geodetic Survey disk stamped "P 49 1935" set in top of northwest end of southwest abutment of CSX railroad bridge over Clear Fork located about 0.2 mile south along CSX railroad from Mountain Ash railroad station

ELEVATION REFERENCE MARKS (Continued)

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
8	0110	1007.19	U.S. Geological Survey disk stamped "TT36BT 1951" set in 4-inch diameter concrete post located about 450 feet along U.S. Route 25W north of intersection of U.S. Route 25W and State Route 628, about 8 feet northwest of telephone pole
9	0110	959.72	chiseled cross on northwest abutment of U.S. Route 25W bridge over Clear Fork, located about 0.6 mile south of intersection of U.S. Route 25W and Flat Woods Road
10	0120	968.00	U.S. Coast and Geodetic Survey disk stamped "Q 49 1935" set in top of east end of south abutment of CSX railroad bridge over State Highway 1804 located 0.1 mile north along CSX railroad from Saxton railroad station
11	0120	966.05	U.S. Coast and Geodetic Survey disk stamped "R 49 1935" set in concrete post located just southeast of southeast corner of Saxton railroad station, about 17 feet west of west rail, 4 feet north of telephone pole
12	0120	963.40	U.S. Coast and Geodetic Survey disk stamped "S 49 1935" set in top of west end of north abutment of abandoned railroad bridge no. 54 over Clear Fork located 0.1 mile southwest along CSX railroad from Saxton railroad station
13	0120	967.46	U.S. Coast and Geodetic Survey disk stamped "X 49 1935" set in concrete base located 7 feet east of east rail of Norfolk Southern Railway at signal tower no. 2022 about 0.8 mile south along Norfolk Southern Railway from Lot railroad station



01P	FEDERAL EMERGENCY MANAGEMENT AGENCY **WHITLEY COUNTY, KY** AND INCORPORATED AREAS	**FLOOD PROFILES** **CUMBERLAND RIVER**



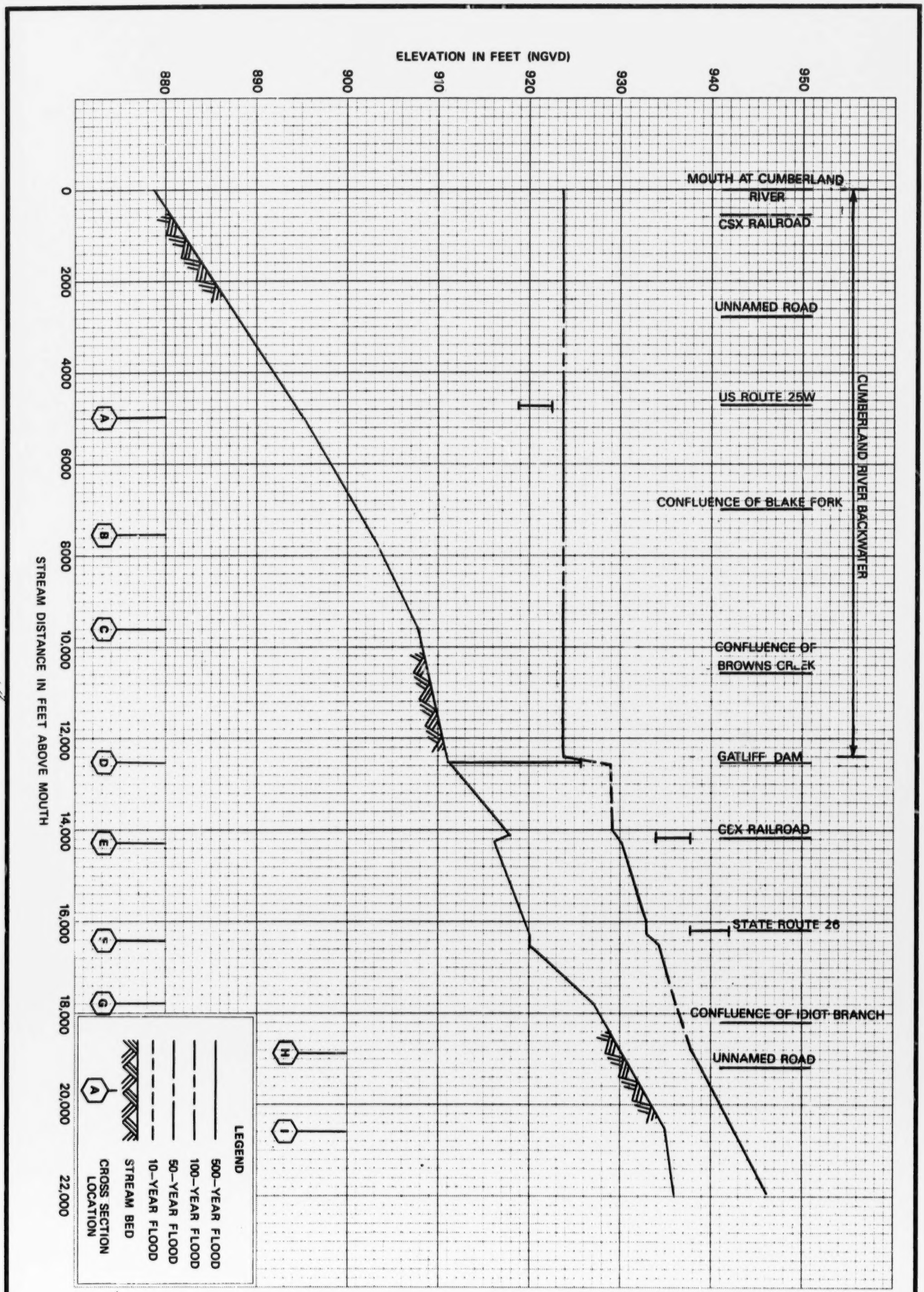
02P

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

CUMBERLAND RIVER



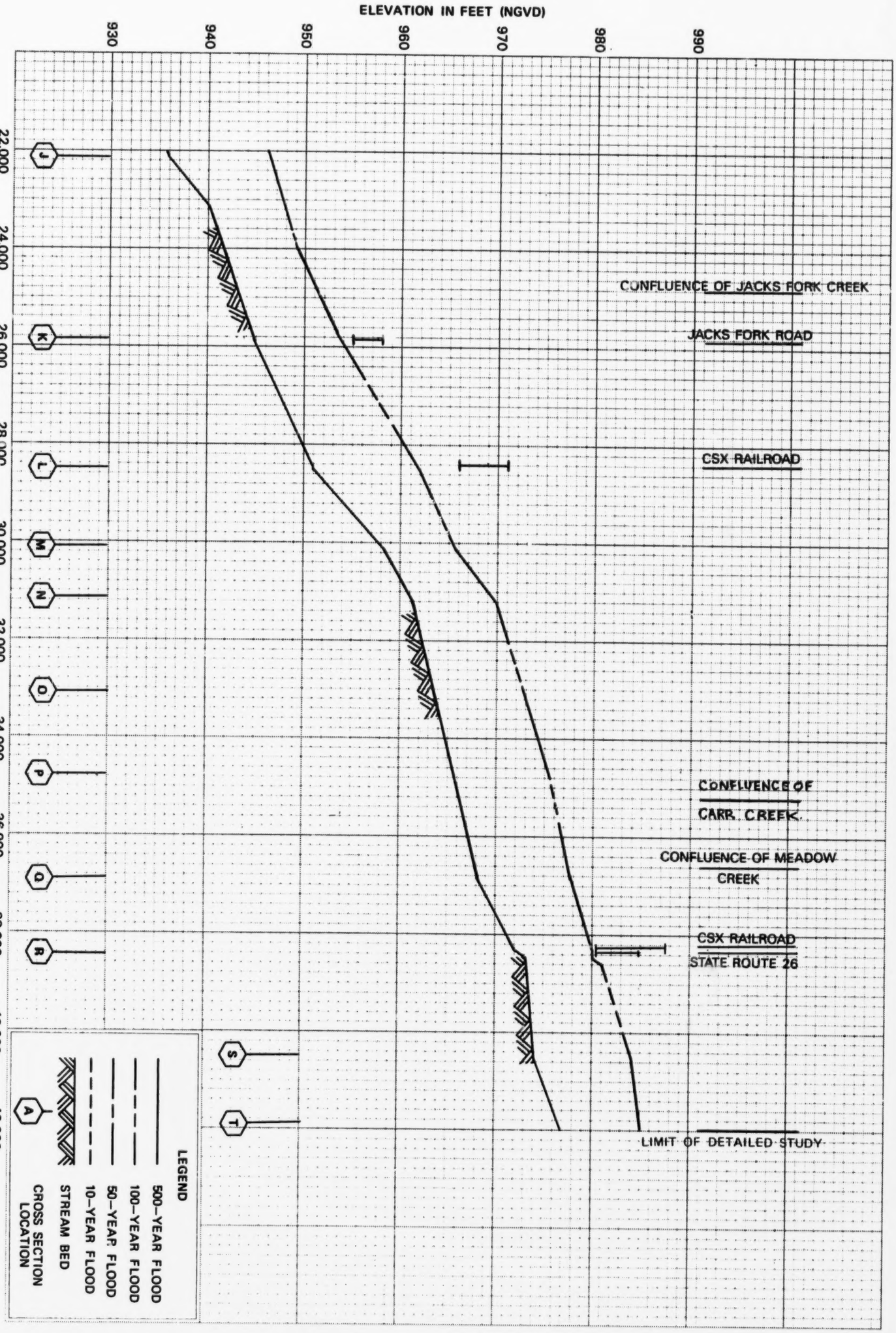
03P

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

WATTS CREEK



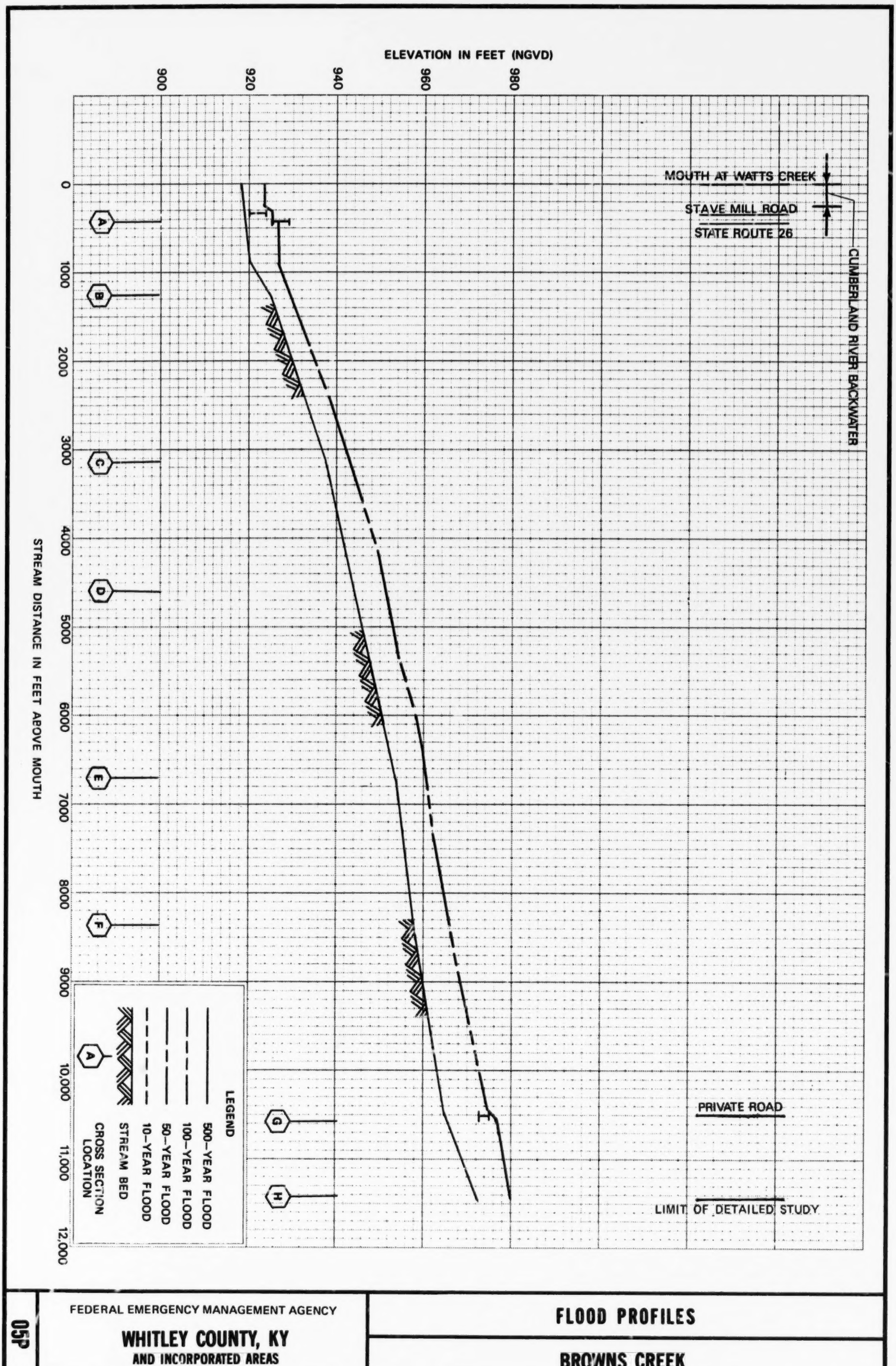
04P

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

WATTS CREEK



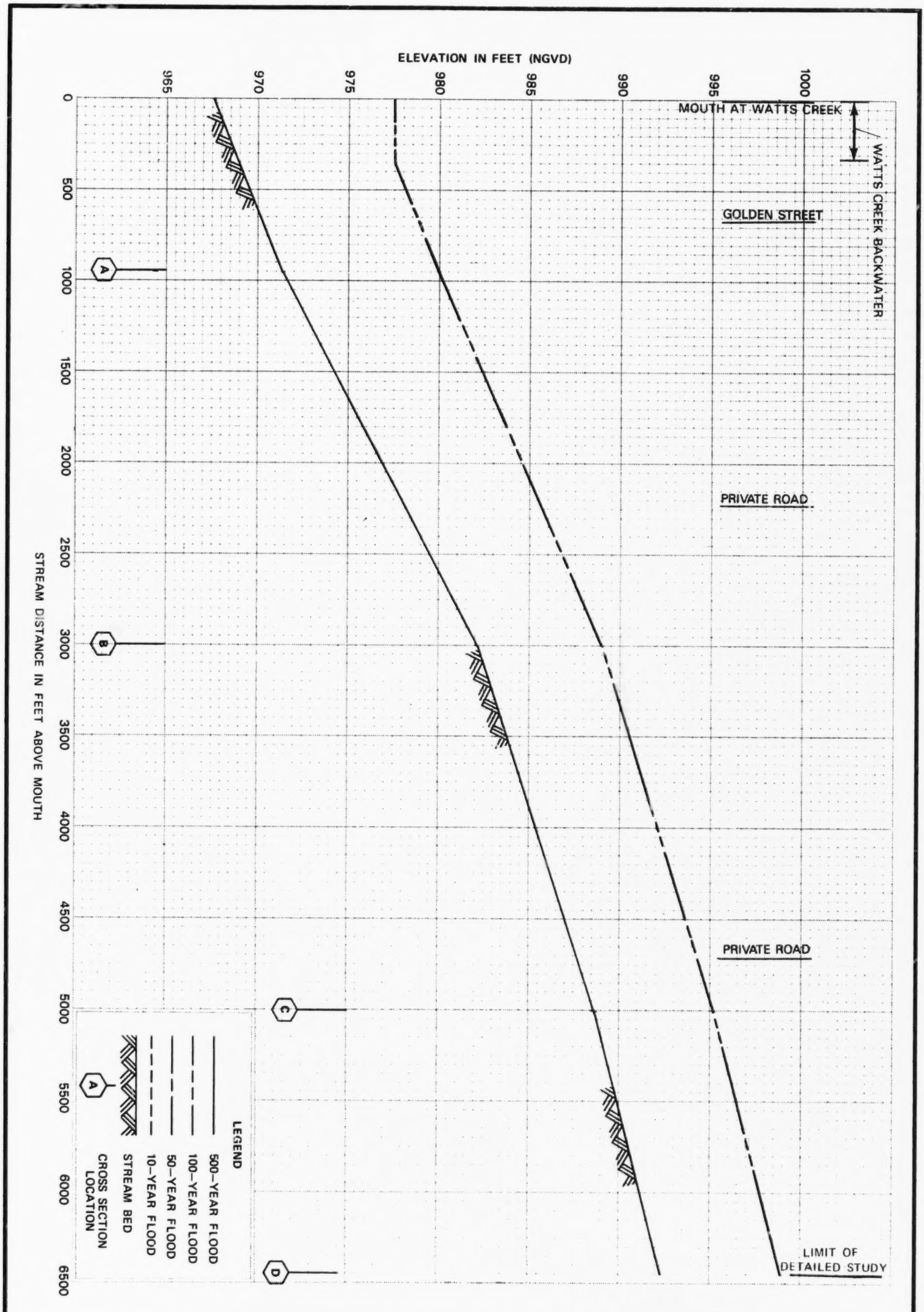
05P

FEDERAL EMERGENCY MANAGEMENT AGENCY

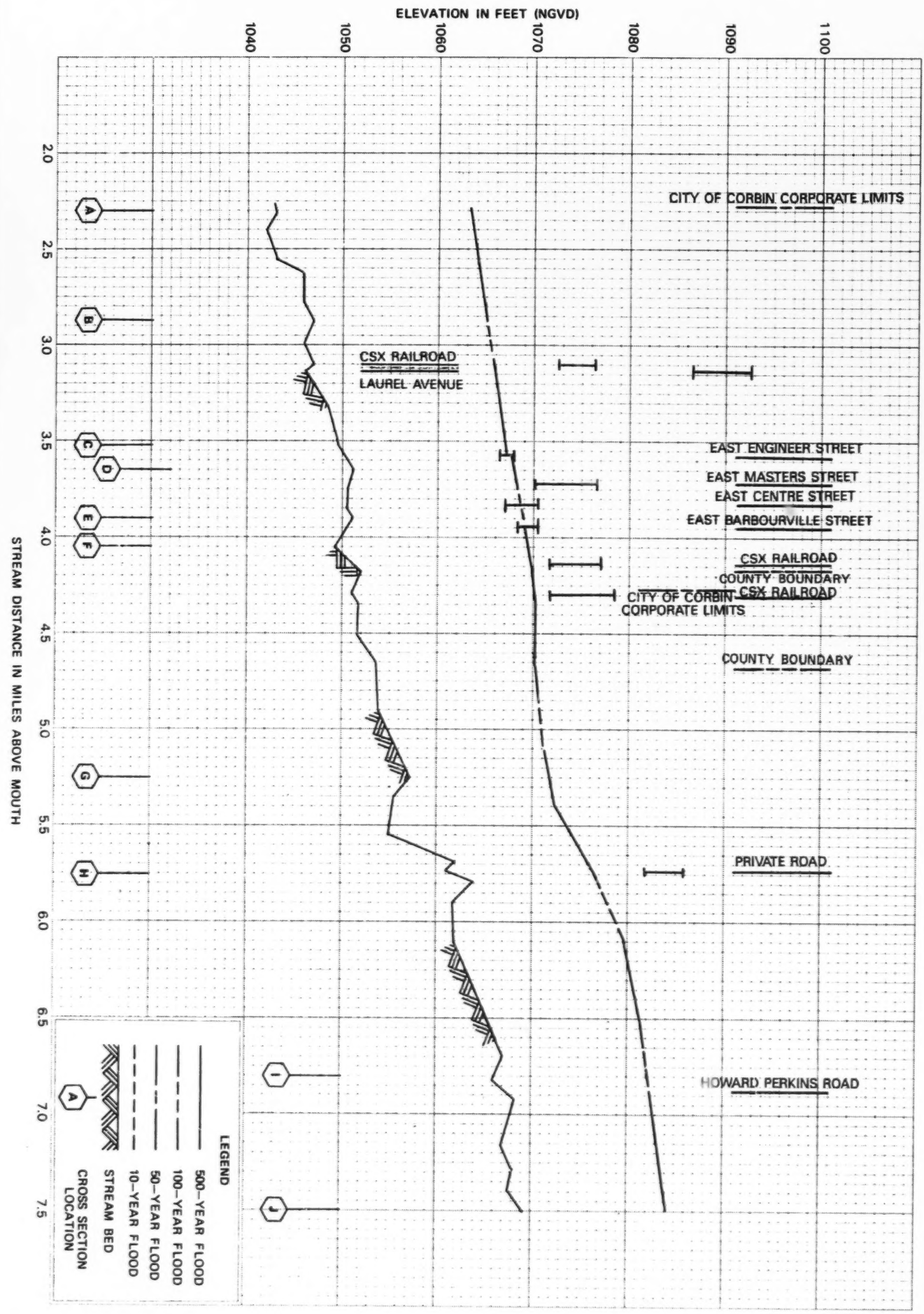
WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

BROWNS CREEK



06P	FEDERAL EMERGENCY MANAGEMENT AGENCY WHITLEY COUNTY, KY AND INCORPORATED AREAS	FLOOD PROFILES MEADOW CREEK



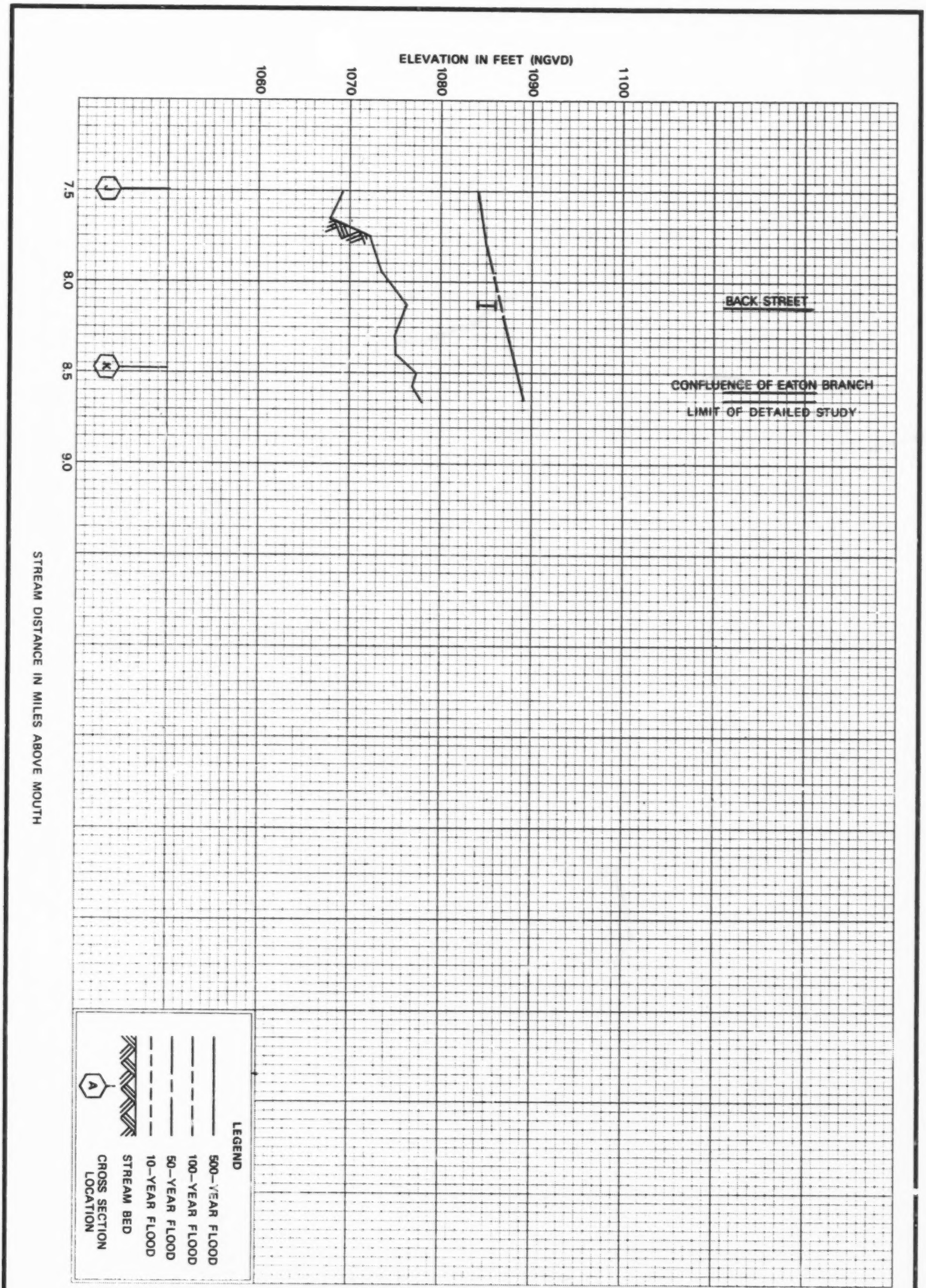
FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

LYNN CAMP CREEK

07P



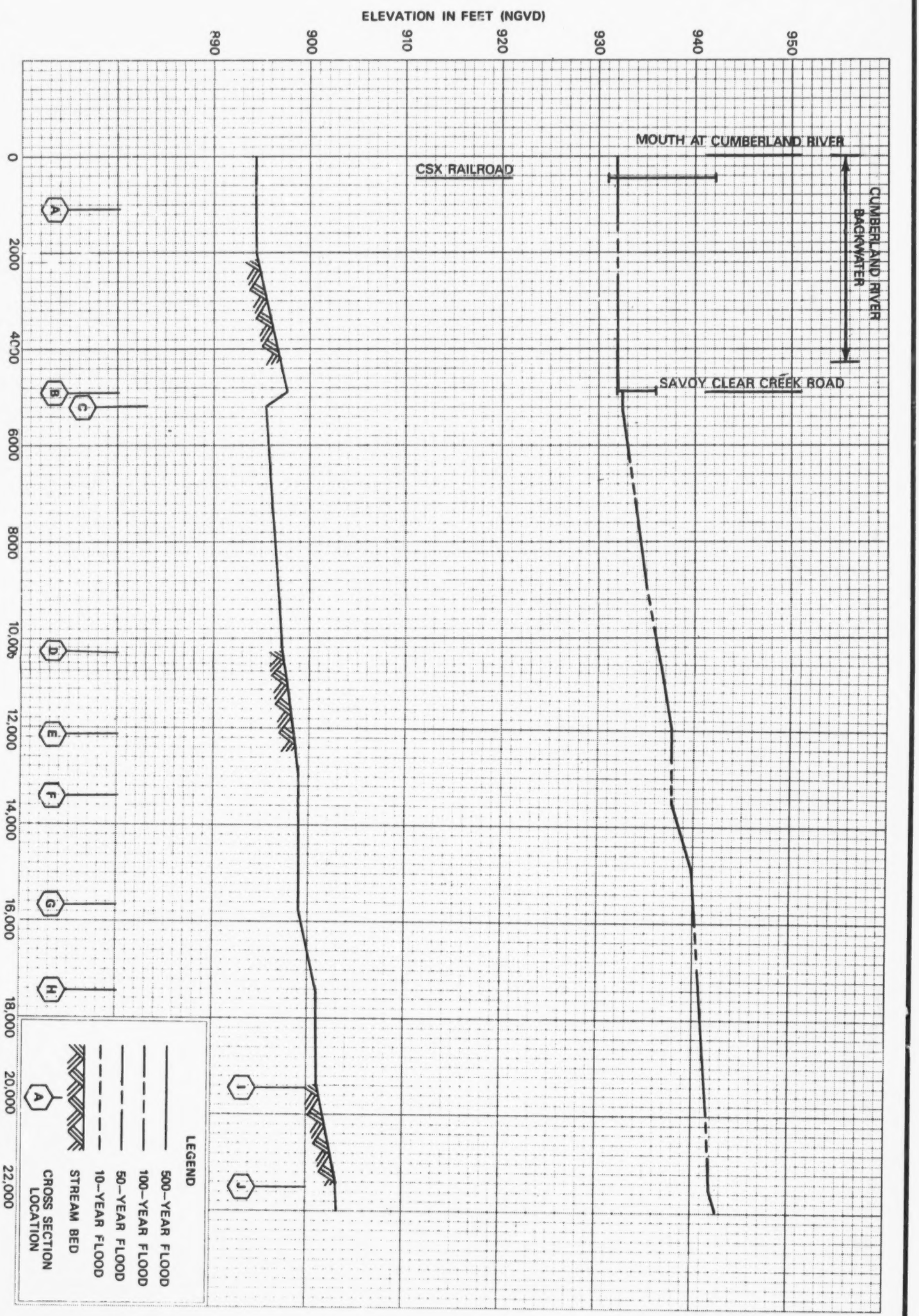
08P

FEDERAL EMERGENCY MANAGEMENT AGENCY

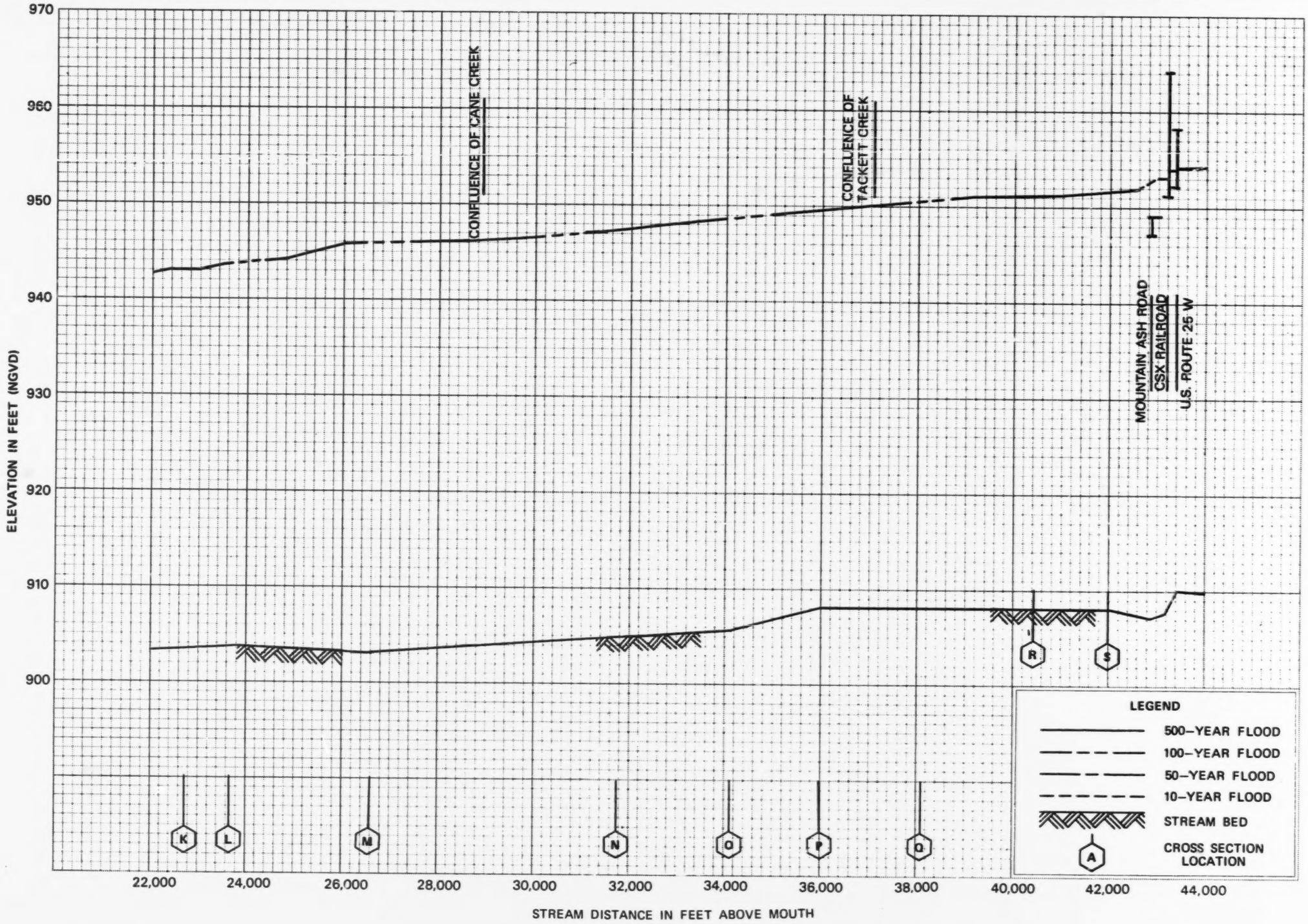
WHITLEY COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

LYNN CAMP CREEK



09P	FEDERAL EMERGENCY MANAGEMENT AGENCY **WHITLEY COUNTY, KY** AND INCORPORATED AREAS	**FLOOD PROFILES** **CLEAR FORK**



FLOOD PROFILES

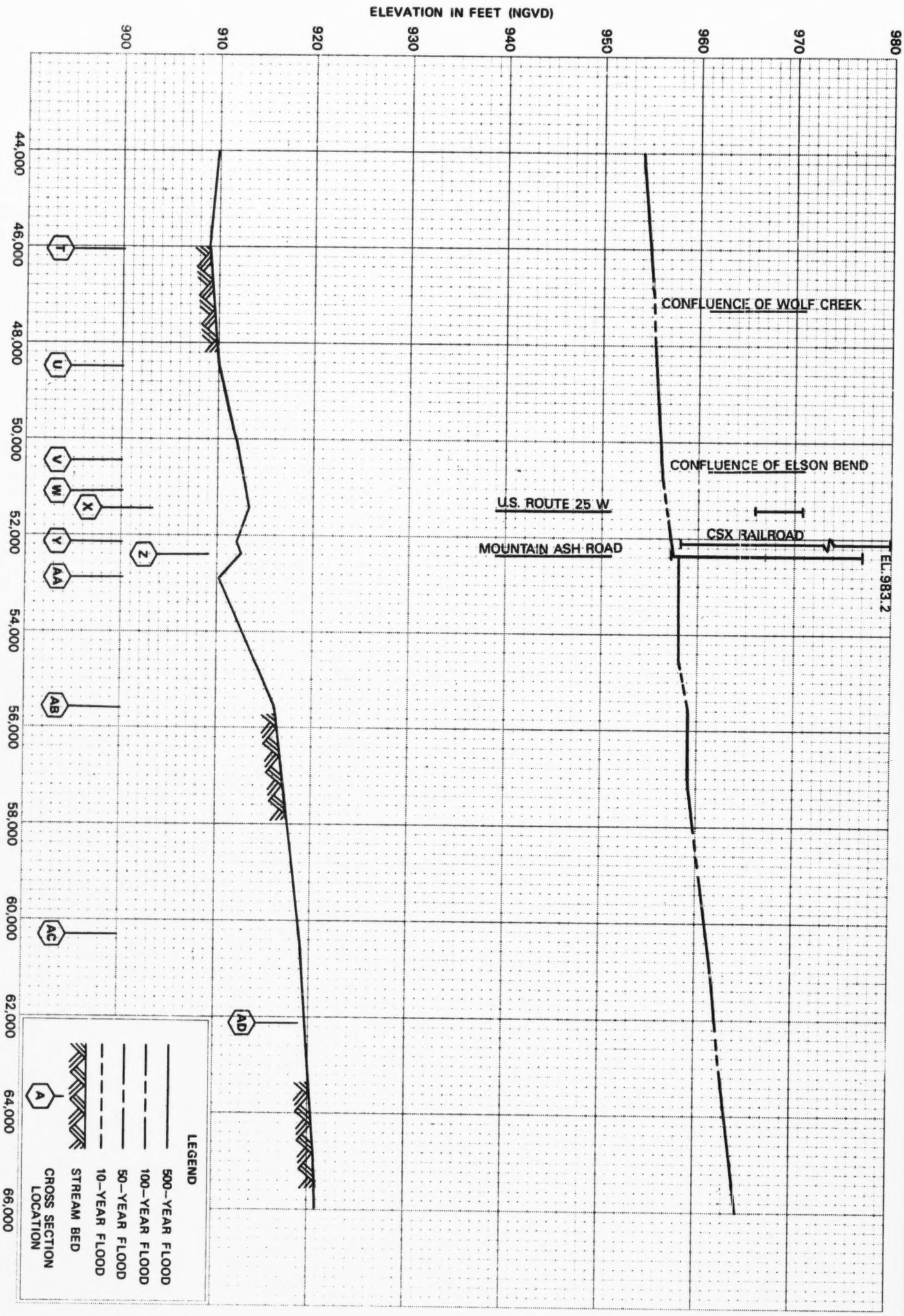
CLEAR FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY

AND INCORPORATED AREAS

10P



FEDERAL EMERGENCY MANAGEMENT AGENCY

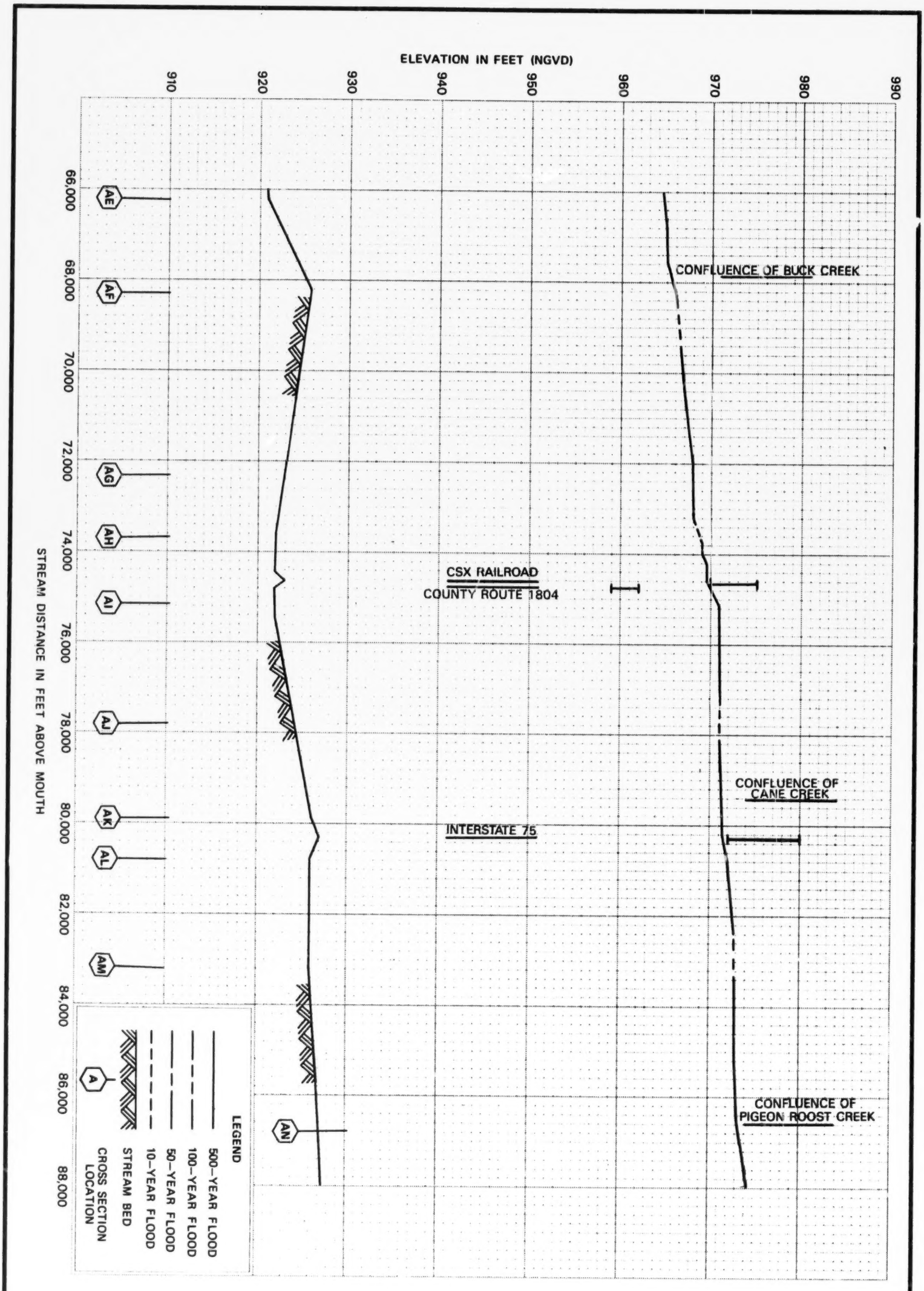
WHITLEY COUNTY, KY

AND INCORPORATED AREAS

FLOOD PROFILES

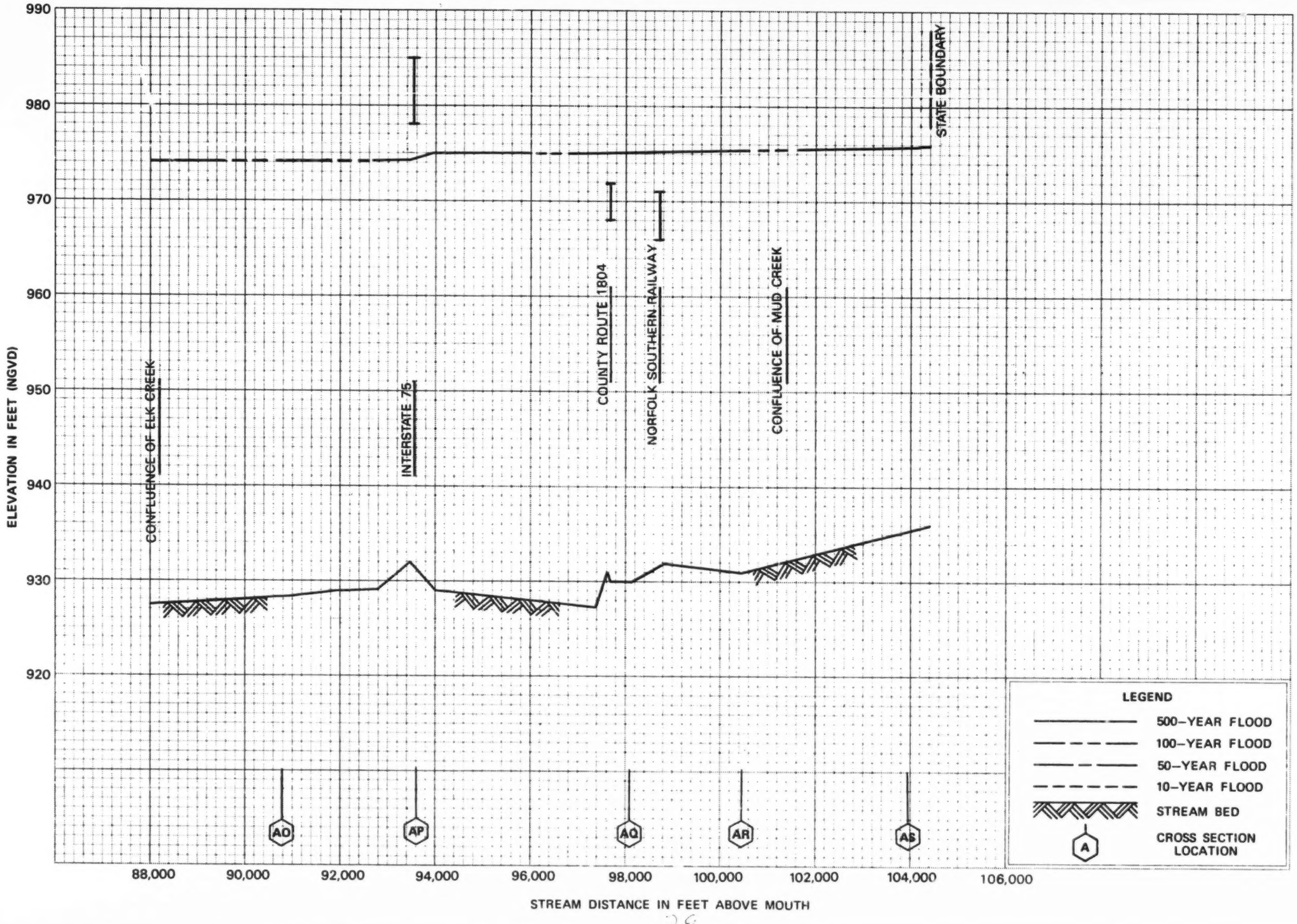
CLEAR FORK

11P



28

12P	FEDERAL EMERGENCY MANAGEMENT AGENCY **WHITLEY COUNTY, KY** AND INCORPORATED AREAS	**FLOOD PROFILES** **CLEAR FORK**



29

FLOOD PROFILES

CLEAR FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WHITLEY COUNTY, KY
AND INCORPORATED AREAS

13P